Certificate of Grant of Patent

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Inventor(s): In J Park

This is to Certify that, in accordance with the Patents Act 1977,

a Patent has been granted to the proprietor(s) for an invention entitled "**Brace bar for sound board of guitar**" disclosed in an application filed **19 November 2003**.

Dated 1 February 2006

Ron Marchant
Comptroller General of Patents, Designs and Trade Marks
UNITED KINGDOM PATENT OFFICE

The attention of the proprietor(s) is drawn to the important notes overleaf.

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Fig. 1

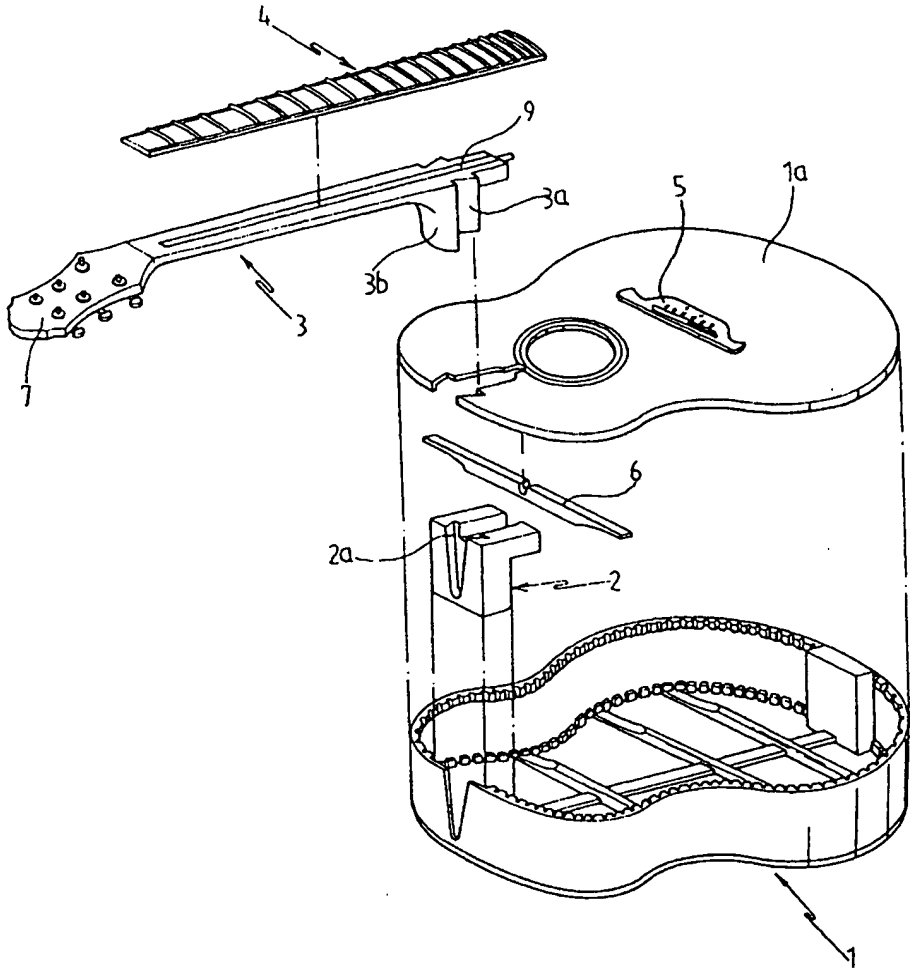


Fig. 2

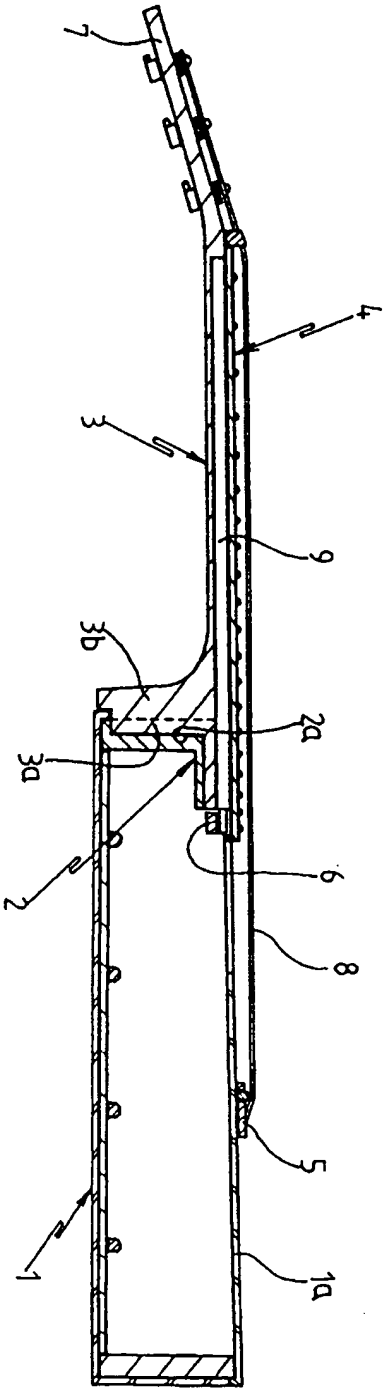


Fig. 3

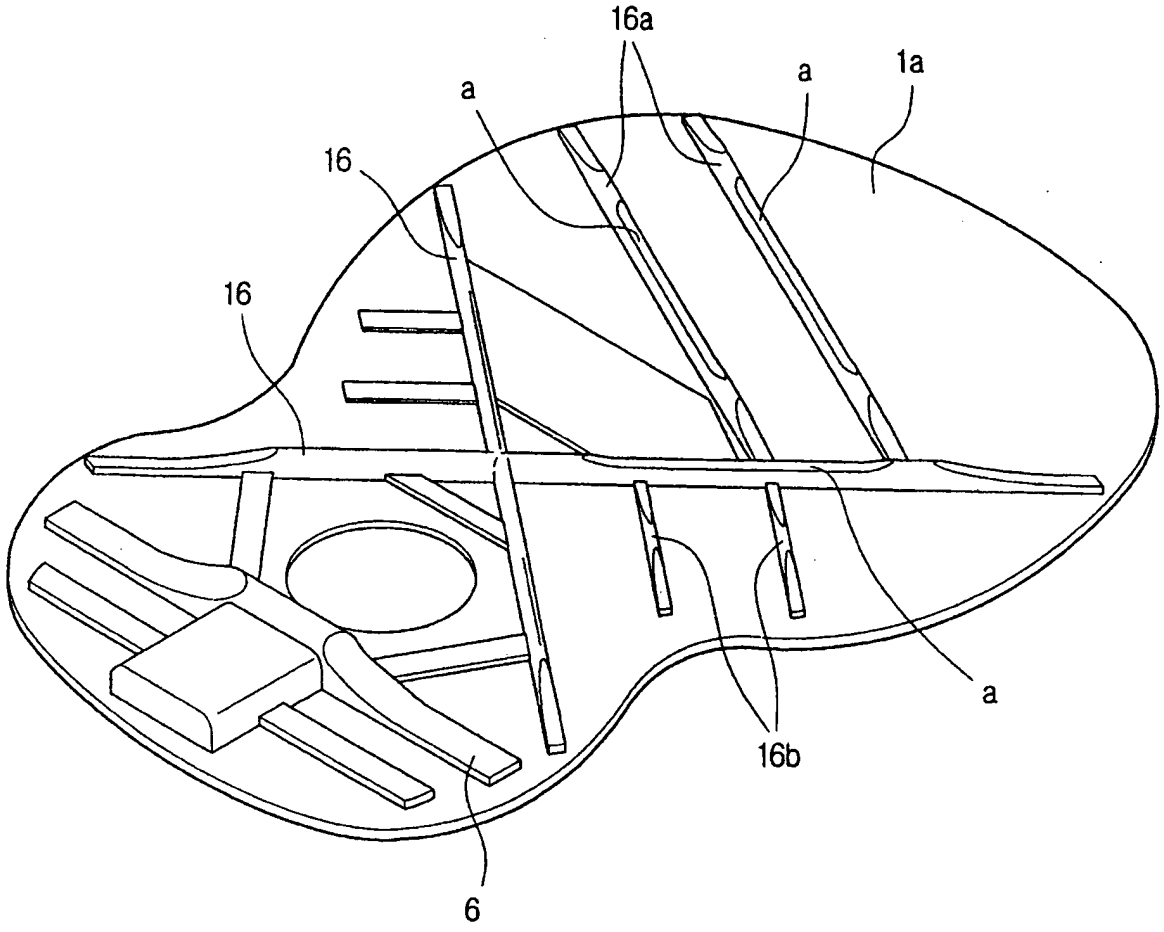


Fig.4

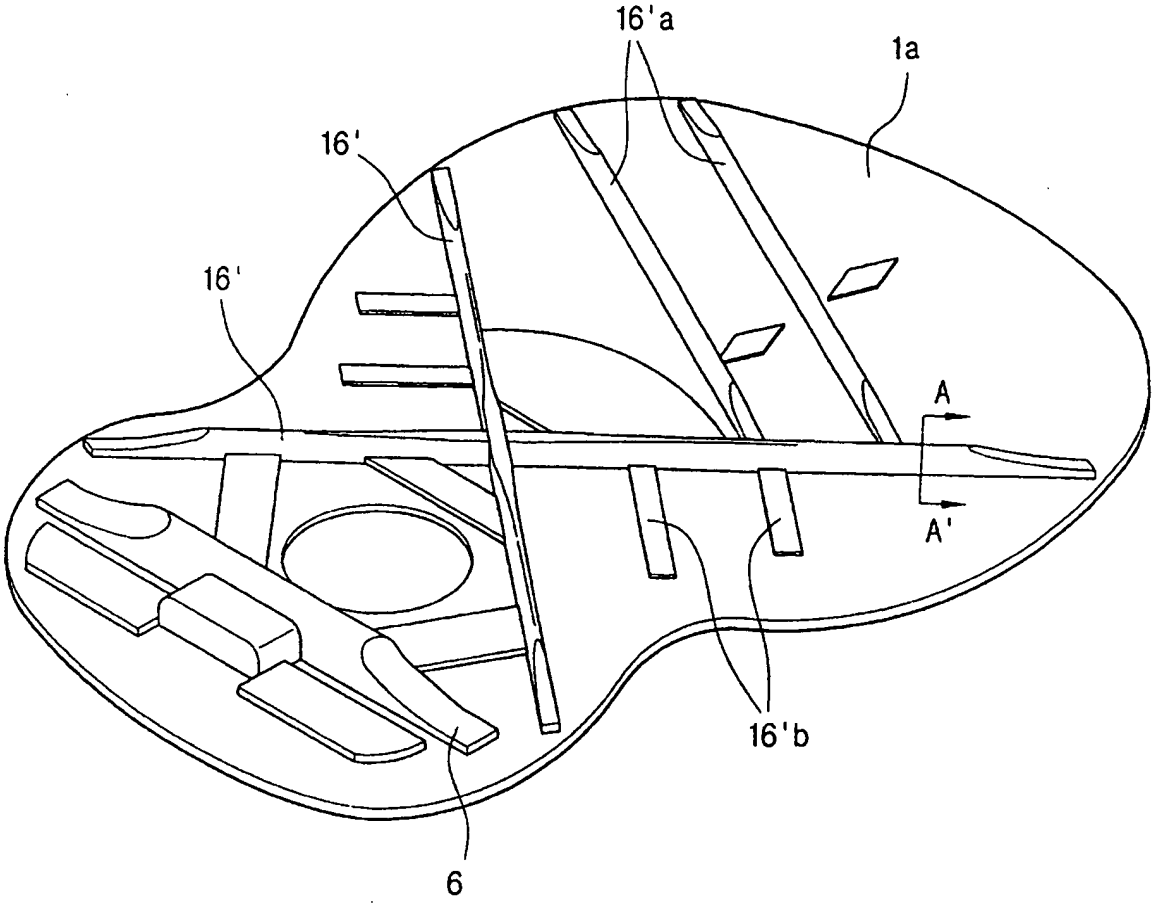


Fig.5

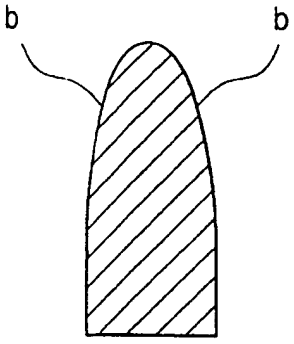


Fig. 6

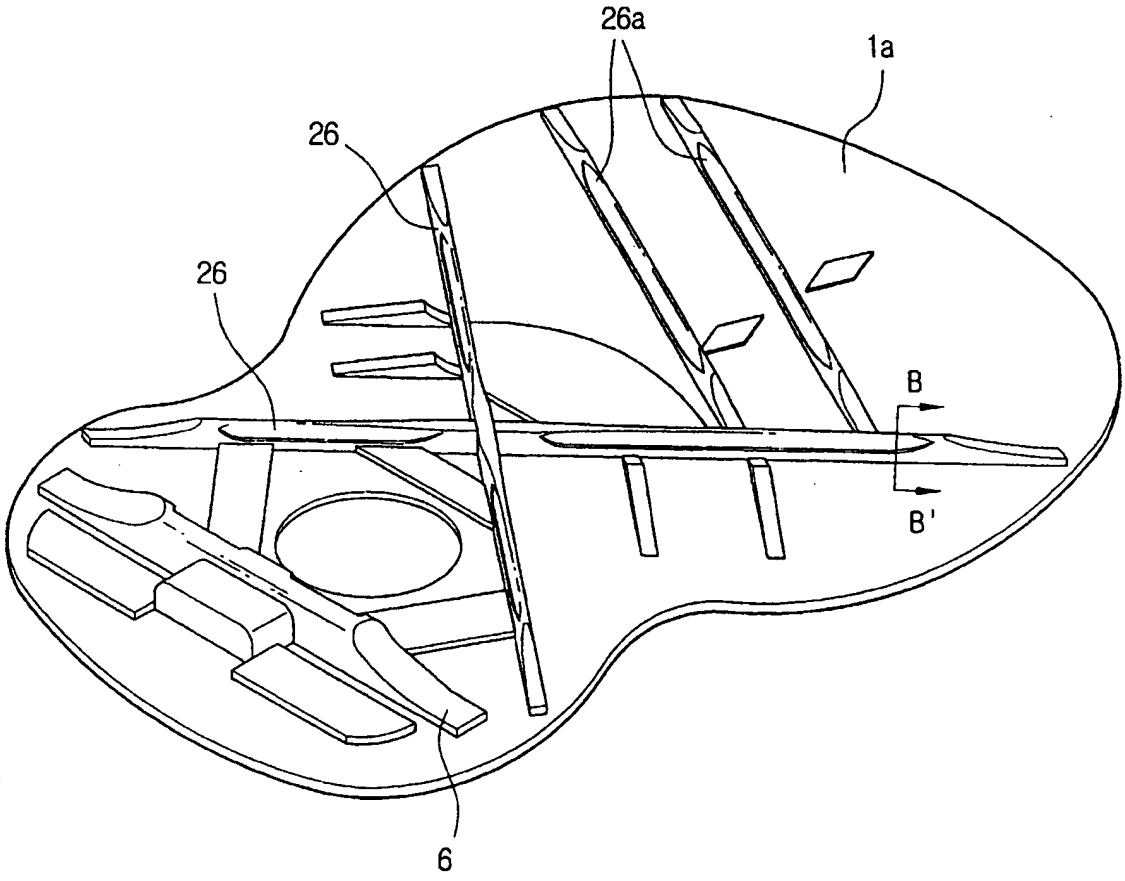


Fig. 7

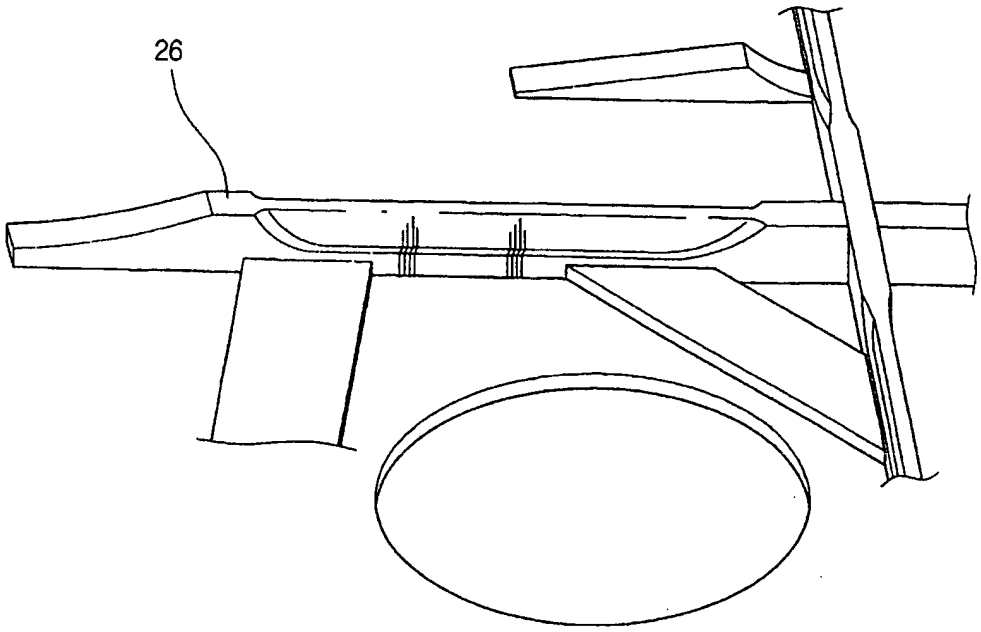


Fig. 8

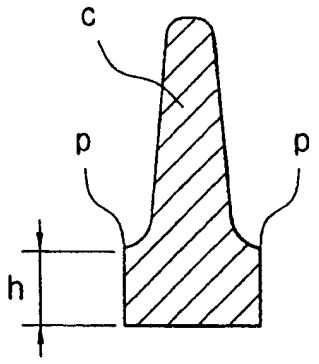
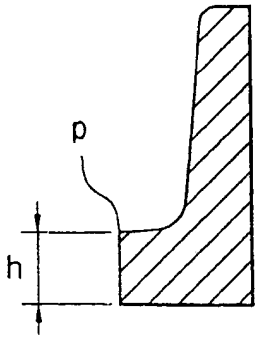


Fig. 9



BRACE BAR FOR SOUND BOARD OF GUITAR

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention pertains, in general, to brace bars attached to an inner surface of a sound board of a guitar to prevent the sound board from being deformed and, more particularly, to a brace bar attached to an inner surface of a sound board of a guitar, which has a modified shape to improve the flexibility of the sound board while maintaining the strength of the sound board, thus improving the resonance of the sound board and reducing a weight of the sound board.

2. Description of the Related Art

Generally, as shown in FIGS. 1 and 2, a guitar includes a body 1 having a sound board 1a attached to an upper part thereof, a block 2 made of wood attached to an inner surface of the body 1 and having a groove 2a to receive a neck 3, the neck 3 connected to the block 2 in such a way that a lug 3a of a heel 3b of the neck 3 is inserted into the groove 2a of the block 2, a fingerboard 4 attached to an upper surface of the neck 3, a bridge 5 attached to an upper surface of the sound

board 1a of the body 1, a brace bar 6 attached to a lower surface of the body 1, a head 7 integrated with an end of the neck 3 which is not connected to the body 1, strings 8 connected between the bridge 5 and the head 7, and a fingerboard adjusting rod 9 longitudinally installed on an upper, central surface of the neck 3 to adjust a state of an even surface of the fingerboard 4.

The guitar is provided with a resonant sound board 1a to resonate for a relatively long time and to make peculiar sounds.

To prevent the sound board 1a from being distorted while it is used for a long term, various kinds of brace bars 16, 16', 16a, 16b, 16a', 16b' are attached to an inner surface of the sound board 1a as shown in FIGS. 3 and 4. The stronger the brace bar attached to the sound board 1a is, the longer a life span of the guitar is. On the other hand, the flexible brace bar contributes to improving resonance of the sound board 1a to allow the guitar to resonate for a relatively long time.

If the brace bar is not strong, the sound bar 1a bends over time. Thus, the life span of the guitar is shortened because the sound bar 1a does not fulfill its own function. On the other hand, if the brace bar is too strong, the resonance of the sound board 1a is poor even though the sound board 1a is not distorted, thus the guitar makes a poor sound for a short time.

Accordingly, it is preferable that the brace bar has flexibility as well as strength. Furthermore, a shape and the number of the brace bar, and an attachment structure of the brace bar to the sound board 1a are important factors affecting the performance and durability of the guitar.

Referring to FIGS. 3 and 4, there are illustrated a plurality of brace bars attached to an inner surface of a sound board of a conventional guitar. At this time, shapes and the number of the brace bars, and the attachment structure of the brace bars to the sound board of FIG. 3 are similar to those of FIG. 4. In other words, two pairs of first and second main brace bars 16, 16' are attached to the inner surface of the sound board in a shape of 'X', and first and second auxiliary brace bars 16a, 16b, 16a', 16b' are attached to the inner surface of the sound board as a way to be positioned around the main brace bars. As described above, FIG. 3 is similar to FIG. 4 in views of the shapes and the number of the brace bars, and the attachment structure of the brace bars to the sound board. However, FIG. 3 is different from FIG. 4 in terms of several facts. In detail, the first main and first auxiliary brace bars 16, 16a of FIG. 3 have recessed parts formed on middle portions (a) thereof. At this time, each of the recessed parts forms a bow with its center being bent downward. On the other hand, the second main and second auxiliary brace bars 16', 16a' of FIG. 4 have not the recessed parts, and each has a cross-

section with a profile of which, when the sound board is orientated as shown, a side extends vertically upward to a position of a predetermined height, thus forming a lower base part, and extends upward while being bent toward the center of each brace bar to form a parabolic upper part (b), as shown in FIG. 5.

That is to say, in FIG. 3, the first main and first auxiliary brace bars 16, 16a have longer heights than widths to allow the sound board 1a of FIG. 3 to have the strength, and have the bow-shaped recessed parts formed on the middle portions (a) thereof to allow the sound board of FIG. 3 to have increased flexibility. Furthermore, the second main and second auxiliary brace bars 16', 16a' of FIG. 4 each has the cross-section with the profile of which the side extends vertically upward to the position of the predetermined height, thus forming the lower base part, and extends upward while being curved toward the center of each brace bar to form the parabolic upper part (b), as shown in FIG. 5, thereby their sectional areas are reduced to allow the sound board 1a of FIG. 4 to have the flexibility to improve the resonance of the sound board 1a and to make a middle- and a low-pitched sound for a relatively long time.

Therefore, a concern of the present invention is to provide a brace bar attached to an inner surface of a sound board of a guitar, which has a modified shape to improve the flexibility of the sound board while maintaining the strength of the sound board.

SUMMARY OF THE INVENTION

Accordingly, the present invention has been made keeping in mind the above problems occurring in the prior art, and an aspect of the present invention is to provide a brace bar attached to an inner surface of a sound board of a guitar, which has a modified shape to improve flexibility of the sound board while maintaining the strength of the sound board, thus improving resonance of the sound board and reducing a weight of the brace bar to reducing a weight of the guitar to provide ease of use to a guitar player.

Additional aspects and/or advantages of the invention will be set forth in part in the description which follows and, in part, will be obvious from the description, or may be learned by practice of the invention.

The above and/or other aspects are achieved in an embodiment by providing a brace bar attached to an inner surface of a sound board forming a body of a guitar to reinforce the sound bar, including a narrow portion having a cross-section with a profile of which, in the orientation shown in Figures 6 to 9, a side extends vertically upward to a position of a predetermined height, thus forming a lower base part, and is curved inward at said position toward a centre of the brace bar, and, thereafter, extends upward while being inclined at a predetermined inclination angle to form a tapered upper part.

BRIEF DESCRIPTION OF THE DRAWINGS

This and other aspects and advantages of the invention will become apparent and more readily appreciated from the following description of the preferred embodiments, taken in conjunction with the accompanying drawing of which:

FIG. 1 is an exploded perspective view of a conventional guitar;

FIG. 2 is a sectional view of the conventional guitar of FIG. 1;

FIG. 3 is a perspective view of a first brace bar attached to an inner surface of a sound board of the conventional guitar;

FIG. 4 is a perspective view of a second brace bar attached to an inner surface of a sound board of the conventional guitar;

FIG. 5 is a sectional view of the brace bar taken in the direction of the arrows along the line A-A' of FIG. 4;

FIG. 6 is a perspective view of a brace bar attached to an inner surface of a sound board of a guitar according to the first embodiment of the present invention;

FIG. 7 is an enlarged perspective view of the brace bar of FIG. 6;

FIG. 8 is an enlarged sectional view of the brace bar

taken in the direction of the arrows along the line B-B' of FIG. 6; and

FIG. 9 is a sectional view of a brace bar according to the second embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Reference will now be made in detail to the present preferred embodiments of the present invention, examples of which are illustrated in the accompanying drawing.

As shown in the drawings, FIG. 6 is a perspective view of a brace bar attached to an inner surface of a sound board of a guitar according to the first embodiment of the present invention, FIG. 7 is an enlarged perspective view of the brace bar of FIG. 6, FIG. 8 is an enlarged sectional view of the brace bar taken in the direction of the arrows along the line B-B' of FIG. 6, and FIG. 9 is a sectional view of a brace bar according to the second embodiment of the present invention.

With reference to FIGS. 6 and 7, brace bars 26, 26a according to the first embodiment of the present invention are attached to an inner surface of a sound board 1a of a guitar to reinforce the sound board 1a. In this regard, the brace bars 26, 26a, each include a narrow portion having a cross-section with a profile of which, in the orientation as shown, a side extends vertically upward to a position (p) of a predetermined height (h), thus forming a

lower base part, and is bent inward at the position (p) toward a center of the brace bar, and, thereafter, extends upward while being inclined at a predetermined inclination angle to form a tapered upper part (c), as shown in FIG. 8.

Meanwhile, FIG. 8 illustrates the brace bar according to the first embodiment of the present invention. At this time, the brace bar according to the first embodiment of the present invention has a cross-section with the profile wherein, in the orientation as shown, both sides extend vertically upward to the position of the predetermined height, thus forming a lower base part, and are bent inward at the position toward the center of the brace bar, and, thereafter, extend upward while being inclined at the predetermined inclination angle to form the tapered upper part. On the other hand, FIG. 9 illustrates the brace bar according to the second embodiment of the present invention. In this regard, the brace bar according to the second embodiment of the present invention has the cross-section wherein, in the orientation as shown, one side extends vertically upward to the position of the predetermined height, is curved inward at the position toward the center of the brace bar, and extends upward while being inclined at the predetermined inclination angle, but the other side extends vertically upward to a top of the brace bar. At this time, an irregular lateral line of the cross-section of the brace bar shown in FIG. 9 has the similar shape to both irregular lateral lines of the cross-section of the brace bar shown in FIG. 8.

Hence, the brace bars according to the first and second embodiment of the present invention have nearly equal strength and flexibility.

The brace bar according to the embodiments includes the narrow portion having the cross-section with the profile of which, in the orientation shown, the side extends vertically upward to the position of the predetermined height, thus forming the lower base part, and is curved inward at the position toward the center of the brace bar, and, thereafter, extends upward while being inclined at the predetermined inclination angle to form the tapered upper part. Therefore, the brace bar of the embodiments has a smaller sectional area than a conventional brace bar, as shown in FIG. 5, having a cross-section with a profile of which a side extends vertically upward to a position of a predetermined height, thus forming a lower base part, and extends upward while being curved toward the center of each brace bar to form a parabolic upper part. Additionally, the brace bar of the embodiments, in the orientation as shown, is slightly higher than the conventional brace bar of FIG. 5, thereby simultaneously having the same strength as the conventional brace bar and the improved flexibility.

As described above, when the flexibility of the brace bar is improved, the resonance of the sound board is improved, thereby the guitar including the brace bar resonates for a relatively long time.

Further, the brace bar of the embodiments has a smaller sectional area than the conventional brace bar of FIG. 5. Thus, the brace bar of the embodiments is slightly lighter than the conventional brace bar, causing a reduction of a weight of the guitar to provide ease of use to a guitar player.

As apparent from the above description, the embodiments provide a brace bar attached to an inner surface of a sound board of a guitar, which has a modified shape to improve flexibility of the sound board while maintaining the strength of the sound board, thus improving the resonance of the sound board to allow the guitar to resonate for a relatively long time and reducing a weight of the guitar to provide ease of use to a guitar player.

The present invention has been described in an illustrative manner, and it is to be understood that the terminology used is intended to be in the nature of description rather than of limitation. Many modifications and variations of the present invention are possible in light of the above teachings. Therefore, it is to be understood that within the scope of the appended claims, the invention may be practiced otherwise than as specifically described.

A further aspect of the invention comprises a brace bar having a mounting surface for being mounted in contact with an inner surface of a sound board of a guitar, the brace bar having a cross sectional shape which varies along its length so that at least one portion of reduced cross section is defined between adjacent portions of larger cross section, wherein the at least one portion of reduced cross section comprises a base portion having side faces extending at right angles to the mounting surface, the portion of reduced cross section being inwardly stepped in cross section to define a shoulder portion narrower than the base portion, and having a tapered portion further reducing in cross section in a direction extending away from the mounting surface, wherein the tapered portion defines a first planar face which is inclined at a predetermined angle relative to the side faces.

Preferably, the tapered portion further defines a second planar face defining an angle of inclination which is equal and opposite to an angle of inclination of the first planar face.

Alternatively the tapered portion defines a further planar face which is co-planar with one of the side faces of the base portion.

CLAIMS

1. A brace bar attached to an inner surface of a sound board for the reinforcement thereof in a body of a guitar, the brace bar comprising:

a narrow portion to improve the flexibility of the brace bar while maintaining strength of the brace bar for improving the resonance of the body of the guitar, the narrow portion having a cross-section with a profile of which at least one side extends at right angles to and away from the sound board to a position at a predetermined distance from the sound board, thus forming a base part, and curves inwardly from said position toward a centre of the brace bar, and, thereafter, extends further away from the sound board while being inclined at a predetermined inclination angle thereto to form a tapered part.

2. The brace bar as set forth in claim 1, wherein the narrow portion has a cross-section such that both sides extend at right angles to and away from the sound board to positions at the predetermined distance from the sound board, thus forming the base part, and curve inward from the positions toward the centre of the brace bar, and, thereafter, extend further away from the sound board while being inclined at the

predetermined inclination angle thereto to form the tapered part.

3. The brace bar as set forth in claim 1, wherein the narrow portion has a cross-section that on one side extends at right angles to and away from the sound board to a position at said predetermined distance, curves inwardly at the position toward the centre of the brace bar, and extends further away from the sound board while being inclined at the predetermined inclination angle to a tip of the brace bar, and wherein the other side extends at right angles to the sound board upward to the tip of the brace bar.

4. A brace bar having a mounting surface for being mounted in contact with an inner surface of a sound board of a guitar, the brace bar having a cross sectional shape which varies along its length so that at least one portion of reduced cross section is defined between adjacent portions of larger cross section, wherein the at least one portion of reduced cross section comprises a base portion having side faces extending at right angles to the mounting surface, the portion of reduced cross section being inwardly stepped in cross section to define a shoulder

portion narrower than the base portion, and having a tapered portion further reducing in cross section in a direction extending away from the mounting surface, wherein the tapered portion defines a first planar face which is inclined at a predetermined angle relative to the side faces.

5. A brace bar as claimed in claim 4 wherein the tapered portion further defines a second planar face defining an angle of inclination which is equal and opposite to an angle of inclination of the first planar face.

6. A brace bar as claimed in claim 4 wherein the tapered portion defines a further planar face which is co-planar with one of the side faces of the base portion.

7. A guitar comprising a brace bar as claimed in any preceding claim.

8. A brace bar substantially as hereinbefore described with reference to and as shown in any one of Figures 6 to 9.